<u>In the Claims</u>:

1. (Previously Presented) A method for interference-resistance for multiple users using closed-loop transmit diversity (CLTD) at a receiver comprising:

receiving a signal;

computing a CLTD weighting vector from the received signal;

providing the CLTD weighting vector to a transmitter; and

using the CLTD weighting vector, a channel estimate, and spreading codes for each user to suppress interference by producing an estimate of the signal transmitted by the transmitter, wherein estimates for the signal use a zero forcing function expressed as:

$$y_{ZF} = (A^H A)^{-1} A^H r, N_C Q \geq M ,$$

where r is the received signal, A is defined as $H\widetilde{W}[\sqrt{\rho_1}C_1 \quad \sqrt{\rho_2}C_2 \quad \cdots \quad \sqrt{\rho_M}C_M]$, H is the channel estimate, *Nc* is the spreading gain, *Q* is the number of received antennas, *M* is the number of multiple users, $\widetilde{W}$ is the weighting vector, $\sqrt{\rho}_i$ is the i-th power source, and *Ci* is the i-th spreading code.

2. (Canceled)

3. (Original) The method of claim 1, wherein the computing of the CLTD weighting vector comprises:

calculating a channel estimate from the received signal; and

computing the CLTD weighting vector based on the channel estimate.

4-5. (Canceled)

6. (Previously Presented) The method of claim 1, wherein the computation of the estimates for the signal is implemented using a parallel or serial interference cancellation technique.

7-8. (Canceled)

9. (Previously Presented) A method for interference-resistance for multiple users using closed-loop transmit diversity (CLTD) at a receiver comprising:

receiving a signal;

computing a CLTD weighting vector from the received signal;

providing the CLTD weighting vector to a transmitter; and

using the CLTD weighting vector, a channel estimate, and spreading codes for each user to suppress interference by

equalizing the received signal; and

despreading the equalized received signal;

wherein estimates for the signal are expressed as

$$z_{ZF} = (\tilde{W}^H H^H H \tilde{W})^{-1} \tilde{W}^H H^H r,$$

where r is the received signal, H is the channel estimate, and $\tilde{W}$ is the weighting vector.

10. (Previously Presented) The method of claim 9, wherein the despreading applies the spreading codes from each user to the equalized received signal.

11. (Previously Presented) The method of claim 9, wherein the equalizing applies the CLTD weighting vector and the channel estimate to the received signal.

12-13. (Canceled)

14. (Previously Presented) The method of claim 9, wherein an equalizer to perform the equalization is implemented as a bank of P*Q filters, wherein P is the number of transmit antennas and Q is the number of receive antennas.

15-18. (Canceled)

19. (Previously Presented) The method of claim 45, wherein the despreading applies the spreading codes from each user to the equalized received signal.

20. (Original) The method of claim 19, wherein the despreading produces a symbol stream for each user.

21. (Previously Presented) The method of claim 45, wherein the coherent combining applies the CLTD weighting vector to despread symbol intervals.

22. (Previously Presented) The method of claim 21, wherein the coherent combining further applies the channel estimate and spreading codes from each user.

23. (Previously Presented) The method of claim 45, wherein an equalizer to perform the equalization is implemented as a bank of P*Q filters, wherein P is the number of transmit antennas and Q is the number of receive antennas.

24-27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Previously Presented) A receiver comprising:

a channel estimation unit coupled to a signal input, the channel estimation unit containing circuitry to calculate an estimate of a communications channel;

a weighting vector unit coupled to the channel estimation unit, the weighting vector unit containing circuitry to compute a computed weighting vector from the estimate of the communications channel;

a feedback unit coupled to the weighting vector unit, the feedback unit to provide the computed weighting vector back to a source of the received signal provided by the signal input;

a weight verification unit coupled to the channel estimation unit and the weighting vector unit, the weight verification unit containing circuitry to generate a comparison result by comparing the computed weighting vector with a received weighting vector received by the signal input; and

an interference resistant detection unit coupled to the signal input and to the weight verification unit, the interference resistant detection unit containing circuitry to use the estimate of the communications channel, spreading codes, and the weighting vector comparison result for interference resistance of the receiver, wherein the receiver receives signals from a plurality of users.

31-32. (Canceled)

33. (Previously Presented) The receiver of claim 30, wherein the interference resistant detection unit first equalizes the received signal and then despreads the equalized received signal.

34. (Previously Presented) The receiver of claim 30, wherein the interference resistant detection unit first equalizes the received signal, then despreads the equalized received signal, and then coherently combines the despread received signal.

35. (Canceled)

36. (Previously Presented) The communications system of claim 30, wherein the communications channel is a wireless communications channel.

37. (Original) The communications system of claim 36, wherein the communications system is a code-division multiple access (CDMA) communications system.

38. (Original) The communications system of claim 36, wherein the transmitter transmits the encoded and spread data stream over multiple antennas.

39. (Previously Presented) The method of claim 50, wherein the suppressing interference further comprises:

producing an estimate of the second signal transmitted by the transmitter, wherein estimates for the second signal use a minimum mean square error function expressed as:

$$y_{MMSE} = (A^H A + \sigma^2 \Lambda^{-1})^{-1} A^H r = \Lambda A^H (A \Lambda A^H + \sigma^2 I_{NN_C Q})^{-1} r,$$

where r is the received signal, A is defined as $H\widetilde{W}[\sqrt{\rho_1}C_1 \quad \sqrt{\rho_2}C_2 \quad \cdots \quad \sqrt{\rho_M}C_M]$, H is the

channel estimate, Nc is the spreading gain, Q is the number of received antennas, M is the number of multiple users, $\widetilde{W}$ is the weighting vector, ρ_i is the i-th power source, $\Lambda = E[dd^H]$, I is the identity matrix, and Ci is the i-th spreading code.

40. (Previously Presented) The method of claim 39, wherein the computation of the estimates for the second signal is implemented using a parallel or serial interference cancellation technique.

41. (Canceled)

42. (Previously Presented) The method of claim 51, wherein the suppressing interference further comprises:

producing an estimate of the second signal transmitted by the transmitter, wherein estimates for the second signal are expressed as:

$$z_{MMSE} = (W^H H^H H\widetilde{W} + (\sigma^2/\mu)I_{NN_C})^{-1}\widetilde{W}^H H^H R$$

$$= \widetilde{W}^H H^H (H\widetilde{W}\widetilde{W}^H H^H + (\sigma^2/\mu)I_{NN_CQ})^{-1} r,$$

where $\mu = \frac{1}{N_c}\sum_{k=1}^{M}\rho_k\varepsilon_k$, $\varepsilon_k = E[|d_k(n)|^2]$, r is the received signal, H is the channel estimate, $\widetilde{W}$ is the weighting vector, and I is the identity matrix.

43-44. (Canceled)

45. (Previously Presented) A method for interference-resistance for multiple users using closed-loop transmit diversity (CLTD) at a receiver comprising:

receiving a signal;

computing a CLTD weighting vector from the received signal;

providing the CLTD weighting vector to a transmitter; and

using the CLTD weighting vector, a channel estimate, and spreading codes for each user to suppress interference by

equalizing the received signal;

despreading the equalized received signal; and

coherent combining the despread equalized received signal,

wherein estimates for the signal are expressed as:

$$z_{ZF} = (H^H H)^{-1} H^H r, \quad Q \geq P$$

where r is the received signal, H is the channel estimate, and Q is the number of received antennas.

46. (Previously Presented) The method of claim 52, wherein the suppressing interference further comprises:

producing an estimate of the second signal transmitted by the transmitter, wherein estimates for the second signal are expressed as:

$$z_{MMSE} = (H^H H + (\sigma^2 / \mu) I_{NN_C P})^{-1} H^H r$$

$$= H^H (HH^H + (\sigma^2 / \mu) I_{NN_C Q})^{-1} r$$

where $\mu = \frac{1}{N_c} \sum_{k=1}^{M} \rho_k \varepsilon_k$, $\varepsilon_k = E[|d_k(n)|^2]$, r is the received signal, H is the channel estimate, and Q is the number of received antennas, ρ_i is the i-th power source.